Should Pulmonary Metastases Be Resected?

The lung, in its filtering capacity for the entire circulation, is a common metastatic site for malignant disease. Accordingly, when pulmonary metastases occur after a presumably complete resection of the primary tumor, the question always arises regarding management of the metastases. Metastatic disease of the lung, therefore, is a subject of continuous observation and review. The indications for pulmonary metastectomy as originally described by Ehrenhaft and colleagues nearly 40 years ago, ie, complete removal of the primary neoplasm, complete resectability of the pulmonary metastases while maintaining adequate pulmonary reserve and low operative risk have changed little, if at all, despite the availability of chemotherapy and radiation therapy as alternative therapeutic options. Other than radiation therapy for pulmonary metastatic tumors of the testicle, surgical resection remains the primary treatment for metastatic disease.

Given the difficulty of visualizing lesions under 3 mm by computed tomography (CT) scan, performing transthoracic needle biopsies on lesions less than 1 cm, and the high degree of variability of the tumor-host relationship, why consider resecting pulmonary metastases at all, particularly when they are multiple? This is a difficult question, the answers to which require a balance between the certain outcome of unresected metastatic disease and the operative morbidity/mortality of major, and perhaps bilateral pulmonary surgery that, in general, also has a poor outcome.

While the decision is often easier to make in the case of a single pulmonary metastasis of, for example, a primary kidney tumor where the 5-year survival can be 50%, the issue becomes cloudier when metastases are multiple and the surgery is performed primarily for palliation.

The report in this issue of CHEST by van Halteren and colleagues (see page 1526) regarding pulmonary resection for metastases of colorectal origin is valuable because it is a nonbiased, third-party evaluation of patients operated upon in one country during a 10-year period analyzed by Cox proportional hazards regression. Their article addresses several important points as follows: (1) Patients with as many as three pulmonary metastases, either unilateral or bilateral, could undergo resection with a 50% 5-year survival, whereas four or more metastases had a 100% recurrence within 16 months. (2) Previous liver resection for hepatic metastases did not influence 5-year survival. (3) Once a metastasis is found, it should be expeditiously resected. Nothing is gained by waiting to determine if metastases not seen by chest x-ray film or CT scan would subsequently become visible and therefore resectable. The point that resection of metastases can be accomplished effectively by wedge resection rather than lobectomy is reemphasized. This latter point, of course, does not necessarily apply to all lesions since squamous cell carcinomas of the head and neck are associated with cigarette smoking, metastasize preferentially to the lung, and often are indistinguishable by needle biopsy from a pulmonary primary, best treated by lobectomy, or a metastases, treatable by wedge resection.

Regarding surgical approaches, unilateral lesions are preferably exposed through thoracotomy while, in many instances, bilateral lesions can be approached through median sternotomy. However, lesions in the left lower lobe can be difficult to resect through a median sternotomy, and when lesions in this area are combined with lesions in the other lung, a bilateral, submammary thoracotomy with the patient in the supine position provides excellent exposure to all lobes of both lungs.

This is a small series, and many questions regarding the management of multiple pulmonary metastases from colorectal origin remain. As the authors point out, during the 10-year period, 70,000 patients were treated for colorectal cancer and only 38 patients were reported as actually having undergone pulmonary metastatic resection. Accordingly, it is likely that only a few patients with isolated lung metastases underwent resection. Whether this was because the metastases were unresectable or because metastectomy was not considered, is unknown. Also, while 15 surgeons were identified who performed pulmonary resections, only 12 responded and provided information for the study. More complete data might significantly influence the reported findings.

Nevertheless, the report is helpful since metastatic disease following colon cancer resection is a recurrent problem requiring decisions by surgeons, family, and patients. The decision must be individualized, given the set of circumstances particular to each individual patient. However, the data, even with drawbacks, indicate that an aggressive approach for pulmonary metastatic disease is often justified.

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